

What happens when we do not operate? Survival following conservative bowel cancer management

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ABSTRACT

INTRODUCTION While surgery is the cornerstone of bowel cancer treatment, it comes with significant risks. Among patients aged over 80 years, 30-day mortality is 13%–15%, and additionally 12% will not return home and go on to live in supportive care. The question for patients and clinicians is whether operative surgery benefits elderly, frail patients.

METHODS Multidisciplinary team outcomes between October 2010 and April 2012 were searched to conduct a retrospective analysis of patients with known localised colorectal cancer who did not undergo surgery due to being deemed unfit.

RESULTS Twenty six patients survived for more than a few weeks following surgery, of whom 20% survived for at least 36 months. The average life expectancy following diagnosis was 1 year and 176 days, with a mean age at diagnosis of 87 years (range 77–93 years). One patient survived for 3 years and 240 days after diagnosis.

CONCLUSIONS Although surgeons are naturally focused on surgical outcomes, non-operative outcomes are equally as important for patients. Elderly, frail patients benefit less from surgery for bowel cancer and have higher risks than younger cohorts, and this needs to be carefully discussed when jointly making the decision whether or not to operate.

KEYWORDS

Aged – Colorectal neoplasms – Life expectancy

Accepted 3 January 2016

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Surgery is the key component of curative therapy for patients with bowel cancer.^{1,2} However, this surgery confers a significant risk. The published 30-day mortality from colorectal cancer surgery in all ages ranges from 2.9% to 5.9%.^{3–6} The latter figure is based on the complete dataset of the English National Cancer Intelligence Network, containing over 20,000 resections performed annually. In the elderly (defined as over 80 years of age), mortality increases to 13–15%.^{1,5,7,8} Thirty-day mortality is a very crude method of assessing the risks of surgery, and evidence from the European Surgical Outcomes Study suggests that 60-day mortality following non-cardiac surgery is at least twice that of 30-day mortality.^{9,10} This would imply that the estimated overall 60-day mortality following colorectal resectional surgery in those aged over 80 years is as high as 30%. Furthermore, mortality figures say nothing about quality of life following surgery. Following resection, 12% of elderly patients will not return to their pre-operative accommodation (ie they will no longer be living at home and will need residential care support) and 69% will experience a deterioration in their activities of daily living (ADLs).^{10,11}

Against these risks must be balanced the obvious benefits of surgery. In a study of the approximately 80% of elderly

rectal cancer patients deemed fit for surgery, 50% of stage 1 disease patients survived to 5 years.¹² Without surgery, it is likely that the majority of these patients would have died from their cancer.

Consequently, while the majority of colorectal cancer patients will benefit from curative surgery, some, most often frail, elderly patients, will have such high risks that these outweigh the benefits. The difficulty for patients and clinicians is deciding into which group an individual patient falls. Although some objective measures of fitness for surgery do exist, this decision is overwhelmingly a subjective one, with little information available on the outcome of non-operative management.¹⁵ The drive to ‘do something’ is so strong among patients, families and clinicians alike that only the most frail and elderly do not end up having surgery. The result is that a potentially significant group of patients will undergo resection when they would have lower mortality and better quality of life without surgery, which has highly significant implications for healthcare costs.

We conducted a retrospective analysis of the non-operative management for colorectal cancer in the most frail and elderly patients. It cannot, due to its design, provide any definitive answers as to who will, and will not, benefit from

curative surgery but it allows some description of the outcomes of patients who currently are not operated on for bowel cancer due to a perceived surgical risk.

Methods

We studied patients aged at least 80 years of age with known colorectal cancer who did not undergo surgery between October 2010 and April 2012, as they were deemed insufficiently fit. All patients with metastatic disease at diagnosis were excluded. As no prospective database existed, patients were identified by searching through the minutes of multi-disciplinary team (MDT) meetings at Colchester Hospital University NHS Foundation Trust (CGH) over the 18-month period for comments related to fitness for surgery.

The patients were then checked against the hospital pathology system and those with resected bowel specimens were excluded. Further information was gathered from the hospital computer systems, including pathology and endoscopy reporting and discharge summaries, and from general practice medical summaries, to give follow-up data up to June 2014.

Finally, a non-systematic search of the PubMed database was performed to identify the current literature on this topic area.

Results

Over the 18-month period, 39 patients with colorectal cancer discussed at the MDT meetings did not have an operation solely as a result of not being deemed fit for surgery. Four patients had so little follow up data that they were not included in further analysis.

Nine patients died within 45 days of diagnosis. Colorectal cancer was either diagnosed as the underlying cause of death or was detected incidentally and the patient died of another cause. Many of these patients were inpatients at the time of diagnosis.

Twenty six patients lived much longer than 45 days, and are presented below. Table 1 shows the demographic data and tumour location for these patients. They were followed up for a minimum of 18 months, and five (20%) were still alive after a mean follow-up of 36 months. One patient was still alive at the time of analysis, 3 years 240 days after their initial diagnosis. The average length of survival after diagnosis was 1 year 176 days. The mean age of these patients at diagnosis was 87 years (range 77–93 years).

The distribution of tumours was: rectum 38%; sigmoid 22%; caecum 11%; ascending 11%; and transverse 8%, which is broadly in line with trends for the general population.¹⁴

A blood transfusion was required by 10 (38%) patients, with five needing one transfusion, two needing two transfusions and three requiring three transfusions. None of these patients were obstructed at presentation but four patients had colonic stents inserted at a later date. One patient, who is still alive, had a further stent when the first one became blocked. Two patients had Argon laser treatment of their rectal tumours.

Table 1 Summary of patient characteristics for non-operable patients who lived for at least 2 months after colorectal cancer diagnosis.

	Patients (n=26)
Age, mean (range)	87 (77–93)
Alive at follow-up*	5 (19)
Mean life expectancy following diagnosis, days (years)	541 (1.5)
Cancer as cause of death** (n=24)	8 (33)
Place of death (n=24)	
Home	6 (25)
CGH	8 (33)
Supportive care	10 (42)
Mean hospital admissions, n	0.6
Stented	5 (19)
Transfused	10 (38)
Tumour distribution	
Rectum	10 (38)
Sigmoid	6 (22)
Caecum	3 (11)
Ascending	3 (11)
Transverse	2 (8)
*After a mean of 36 months	
**On Part 1 of death certificate. All values n (%), unless otherwise stated. Abbreviations: CGH, Colchester General Hospital	

None of the patients had any other forms of surgery, such as a defunctioning stoma. In general, rectal cancer patients experienced significant symptoms and had contact both with colorectal nurse specialists and the general practitioners, whereas those with colonic tumours asymptomatic apart from the few needing stents or transfusions.

Of the patients who had died by the end of the study period, 30% had bowel cancer as their main cause of death (recorded on on Part 1 of their death certificate), while the remaining 70% died from other causes.

Discussion

Data from the National Bowel Cancer Audit indicates that our institution has 270 newly diagnosed bowel cancers each year. Given that we identified 39 patients who did not undergo surgery due to frailty over an 18-month period, this would suggest that approximately 10% of patients fall into this non-operative group. The life expectancy among this group of frail, elderly patients was at least 1 year and 176 days, which compares with an average life expectancy of 3 years and 182 days among 87-year-olds in the general population.¹⁵

The retrospective nature of this study means that not all co-morbidities will be known. However, it is likely that they will have more co-morbidities than the average patient, and

that the diagnosis of cancer will have made little difference to their overall survival. This is supported by retrospective studies of the American Surveillance, Epidemiology, and End Results and Medicare databases.^{12,16} As patients become more elderly, their overall survival drops more rapidly, while their cancer specific survival drops more slowly, relative to younger patients. This indicates that elderly patients with bowel cancer are less likely than younger patients to die of their cancer and will therefore gain less benefit from surgery for cancer. It is important to emphasise that it is not age itself that should determine the risk of surgery but an emerging concept of frailty. In other words, while ageism is not the right way to approach decision making, 'riskism' is more sensible.^{15,17} The complicating factor to this moral argument is that age itself is highly correlated to increasing risk.¹⁵

Frailty

What do patients and surgeons need to further inform the decision on who will benefit from surgery? Both cardiopulmonary exercise testing (CPET) and the Portsmouth-Physiological and Operative Severity Score for the Enumeration of Mortality and Morbidity correlate with postoperative outcomes; however, their use diminishes in more frail elderly populations.^{4,18} Moreover, the impact of CPET testing becomes less and less useful in the elderly. While CPET testing can explain approximately 66% of the increased mortality in some groups at 45 years of age, this reduces to 9% at 80 years, thus underscoring the need for other measures of risk in the elderly.¹⁹ Frailty is an emerging concept in geriatric medicine but is only just beginning to be used in preoperative assessment.^{15,20} In this paper, frailty and elderly have been used interchangeably, but frailty is the more important concept. Chronological age does not always reflect biological age, and clearly age alone should not be used to decide on fitness for surgery, although it remains the most closely associated factor with postoperative mortality and morbidity.^{15,19}

Although there is no generally agreed definition of frailty, it is a state or syndrome of decreased resistance to stress resulting from a deterioration in a variety of homeostatic mechanisms.²¹ One study used measures of ADLs and independence of ambulation to predict postoperative outcomes following cardiac surgery.²¹ Not surprisingly, the more frail the patient, the higher the rate of morbidity and prolonged postoperative institutional care; other studies have shown similar increased risks of complications.²² Although this is self-evident, this is an important step towards defining the group of patients in whom surgery is very likely to lead to mortality or cause a significant reduction in function. Prospective databases could record frailty and postoperative functional status and use this data to help decide the benefits and harms of surgery. A recent study has gone some way to addressing this.¹⁵ The Hopkins Frailty Score, consisting of the five factors of weight loss, decreased grip strength, exhaustion, low activity and slow walking speed, demonstrated that any degree of frailty was linked to worse postoperative outcome. However, the average age in this study was

62 years, significantly younger than that of the patients in previous papers.^{15,25} This tool therefore needs further evaluation, but may become a useful way to assess operative risk in frail patients.

Quality of life

Thirty-day or even 60-day mortality is a crude measure of the benefits and risks of surgery; quality of life is at least as important, particularly in a group that has a short life expectancy. In the elderly patient, major surgery has significant implications for ADLs and ongoing postoperative accommodation; ie many patients never go back home after their operations and end up in supportive care facilities. Balanced against this are the symptoms of untreated bowel cancer. In our cohort, several patients with rectal cancer had ongoing symptoms that significantly affected their lives; in contrast, colonic tumours remained fairly asymptomatic, excepting the occasional need for transfusion. This finding is supported by other studies showing that patients managed non-operatively initially rarely need emergency operations later, with 0.4% needing a stent and 1.4% a diverting stoma.¹⁶ Previous research in patients with unresectable liver metastasis has shown that non-operative strategies for primary colorectal tumour do not result in significant symptomatic problems.²⁴ In two studies showing a postoperative 30-day mortality of 14% in the over 75s, information was also assessed on the outcomes of complications.^{25,26} Although the rate of anastomotic leaks was the same as in younger patients, mortality from these leaks was much higher, with 57% of patients aged over 75 years dead at 6 months. Further research has shown that end stomas did not negatively affect quality of life scores in women aged over 75 years but did affect those aged under 75 years.²⁷ Taken together, these results should inform the decision over performing anastomosis versus a permanent stoma in elderly, frail patients.

Value

Value is the overall benefit of an intervention to a patient divided by its costs. Surgical costs are significantly larger in elderly patients than in their younger counterparts.²⁸ This is partly due to an increased rate of complications, as well as longer hospital stays. The value of colorectal surgery is therefore lower in frail patients than younger more robust ones. As healthcare resources are limited, this is an important observation, particularly in an era of healthcare rationing in which not all patients with moderate postoperative risk go to intensive care units after surgery despite evidence that they would fare better.⁵ It would therefore surely be a better use of resources to maximise the care of more robust patients than spending large amounts of resources achieving smaller benefits in frail patients. Again, it should be stressed that age itself is not a reason for deciding not to perform surgery; the reason should be the increased risks of surgery in this group. A non-operative management strategy has been used very successfully in breast cancer in the most frail patients with good outcomes, and it may be that more frail patients with bowel cancer are better off with non-operative strategies.²⁹

Conclusions

Ours is a case series of the most elderly and frail with colorectal cancer in one hospital and, to the best of our knowledge, it is the only paper looking at the follow up of patients with a non-operative strategy. Surgeons, by their very nature, are focused on surgical outcomes and their improvement. For patients, however, the outcomes of non-operative management are as relevant as those following surgery. Much has been written about informed consent and the lack of discussion around the benefits and risks of surgery, with the conversation more related to its potential complications.⁵⁰ Patients should be part of the decision-making process and, to achieve this, they need to know the outcomes of both non-operative and operative management.⁵¹ However, it is questionable whether we are really able to provide this group of vulnerable patients with clear guidance regarding surgery, in accordance with GMC guidelines.⁵² Studies looking at long-term outcomes with regard to life expectancy and quality of life do not exist. All members of the MDT, including anaesthetists and nurse specialists, should be collaborating to gather prospective data regarding non-operative outcomes to enable patients and surgeons to make the most informed decisions.

Acknowledgements

None of the authors received any funding for this study or have any conflicts of interest.

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